Overview of MD Striped Bass Surveys

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MD DNR - Fishing and Boating Services

Striped Bass Survey Assessment and Habitat Connections

February 13 - 14, 2025

Overview of MD Striped Bass Surveys

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Outline

- Fishery Independent Surveys
- Trends
- Recent Concerns
- Fishery Dependent Surveys
- Questions

Overview of MD Striped Bass Surveys

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Fishery Independent Surveys

Spawning Stock Survey - Objectives

- Estimates of relative abundance-at-age
- Characterize MD's spawning population
  - Length and age distribution
  - Sex and spawning condition
  - Mean length-at-age
  - % older than age 8
- Part of USFWS coastwide cooperative tagging program

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Fishery Independent Surveys

Spawning Stock Survey - Methods

- 1985-present, April-May, 4-6 days/week, for approx. 6 weeks
- Potomac River, Upper Bay spawning grounds (>80% of spawning area in MD)
- Multifilament nylon drift gill net
  - 3, 3.75, 4.5, 5.25, 6, 6.5, 7, 8, 9 and 10-inch stretch-mesh, 150’ each
  - 10’ deep x 1500’ long
  - Very selective
- Short timed sets around slack tide
- Total length, sex, scales, water quality
- USFWS tags applied (1987 – present)

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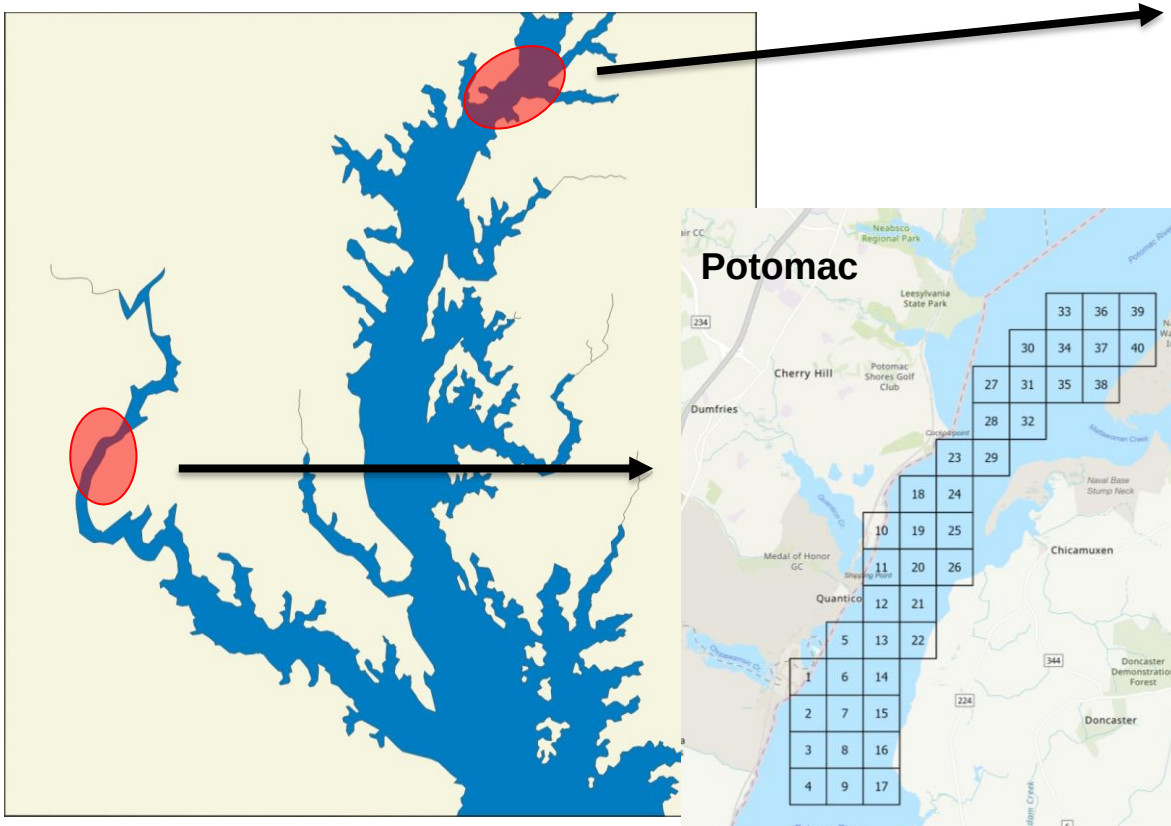
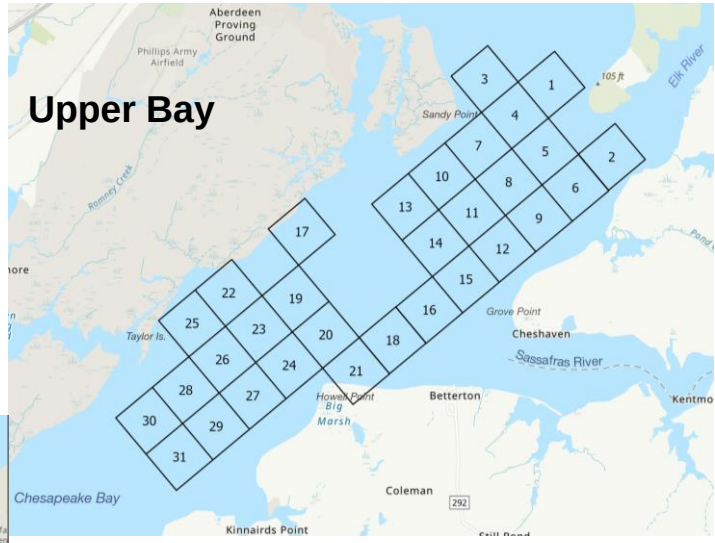
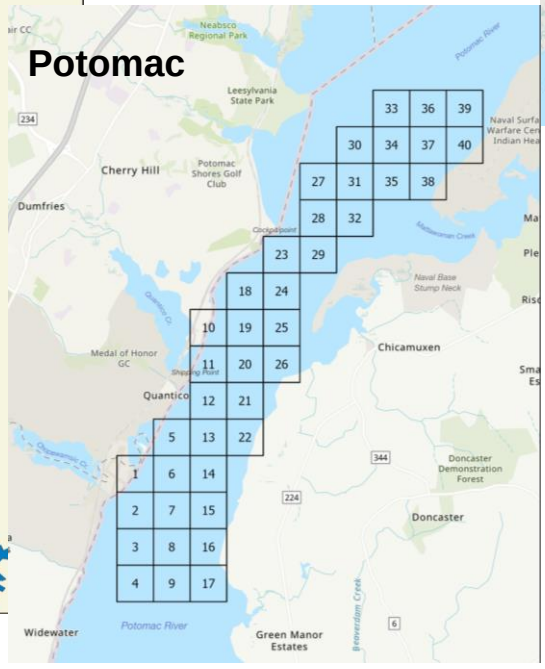
Spawning Stock Survey - Methods

- Stratified Random Design – 1 site fished per day







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Spawning Stock Survey - Results

- Catches dominated by small males
- Female catches low and sporadic
- Potomac catches had declined over past decade, but increased in last 2 years
- Upper Bay catches declined in recent years
- In 2023, we caught:
  - 1,494 males aged 2 to 12
  - 67 females aged 5 to 20

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Fishery Independent Surveys

Spawning Stock Survey - Results

- Estimates of relative abundance-at-age
  - CPUE = # caught/1,000 yd^2/hour
- CPUE summed for each mesh and length group, divided by the total effort for each mesh
- CPUEs corrected for selectivity
- Length group CPUEs converted to age-specific CPUEs
- Calculated by area and sex, and combined (weighted by spawning area)
- Stock assessment index = sexes and areas combined, with age composition data

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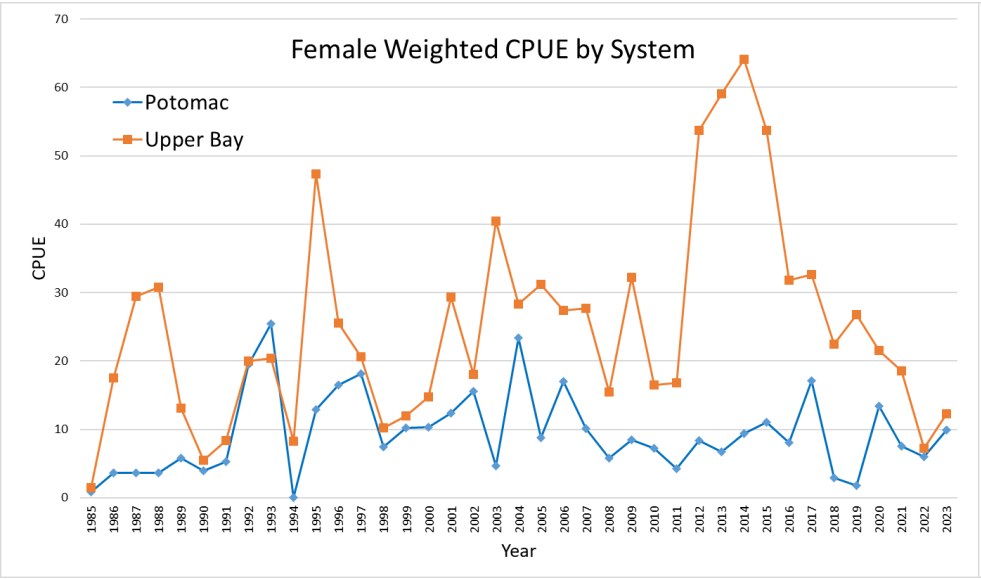
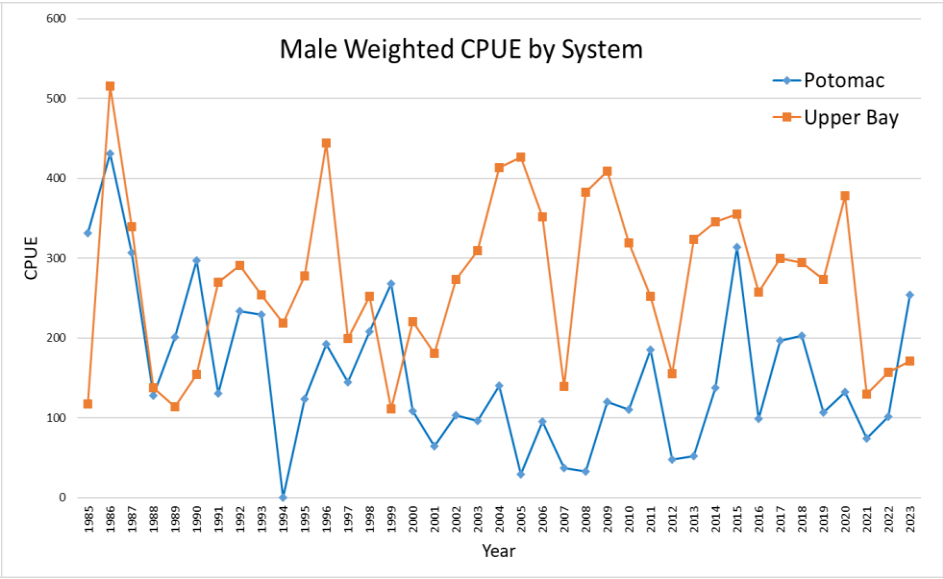
Spawning Stock Survey – CPUE





- Note different scales
- CPUE = (# caught/1,000 yd^2/hour)
- Upper Bay usually higher than Potomac

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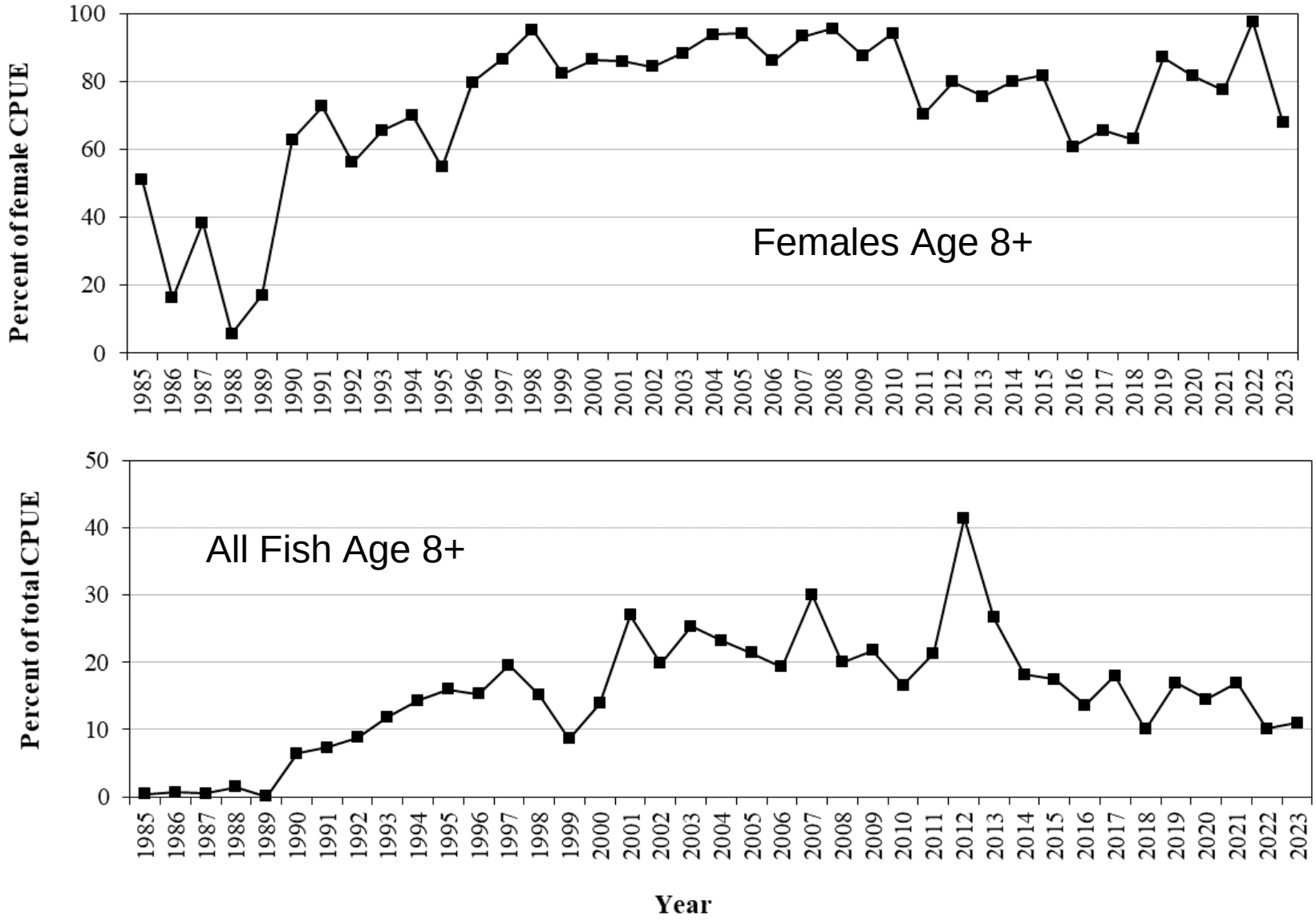

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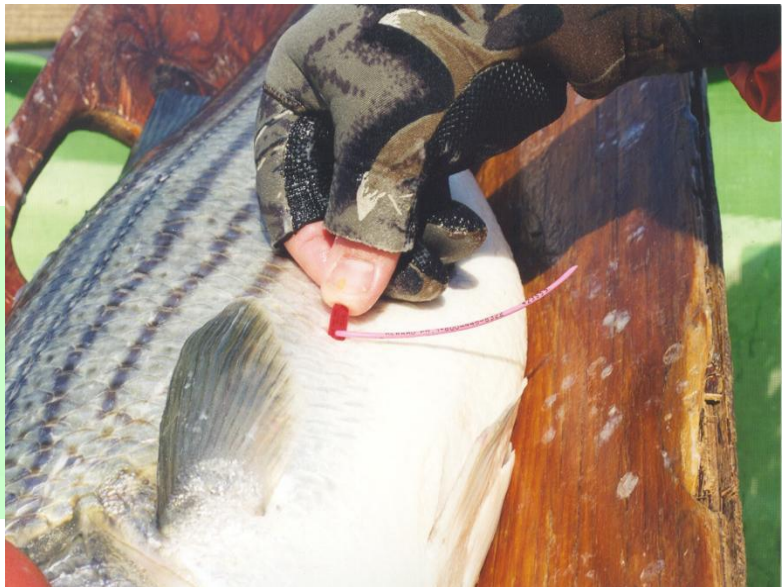
Fishery Independent Surveys

Spawning Stock Survey - Results

- USFWS cooperative coastal program
- Internal anchor tags
- Serial number, phone number on tags

- Over 45,000 fish tagged in MD since 1987
- Over 8,000 recaptures to date (18%)



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Spawning Stock Survey

- Recent Criticisms
  - "We're missing fish spawning"
  - "Fish are spawning earlier"
  - "The fish are spawning in other places"
  - "We can show you how to catch more fish"

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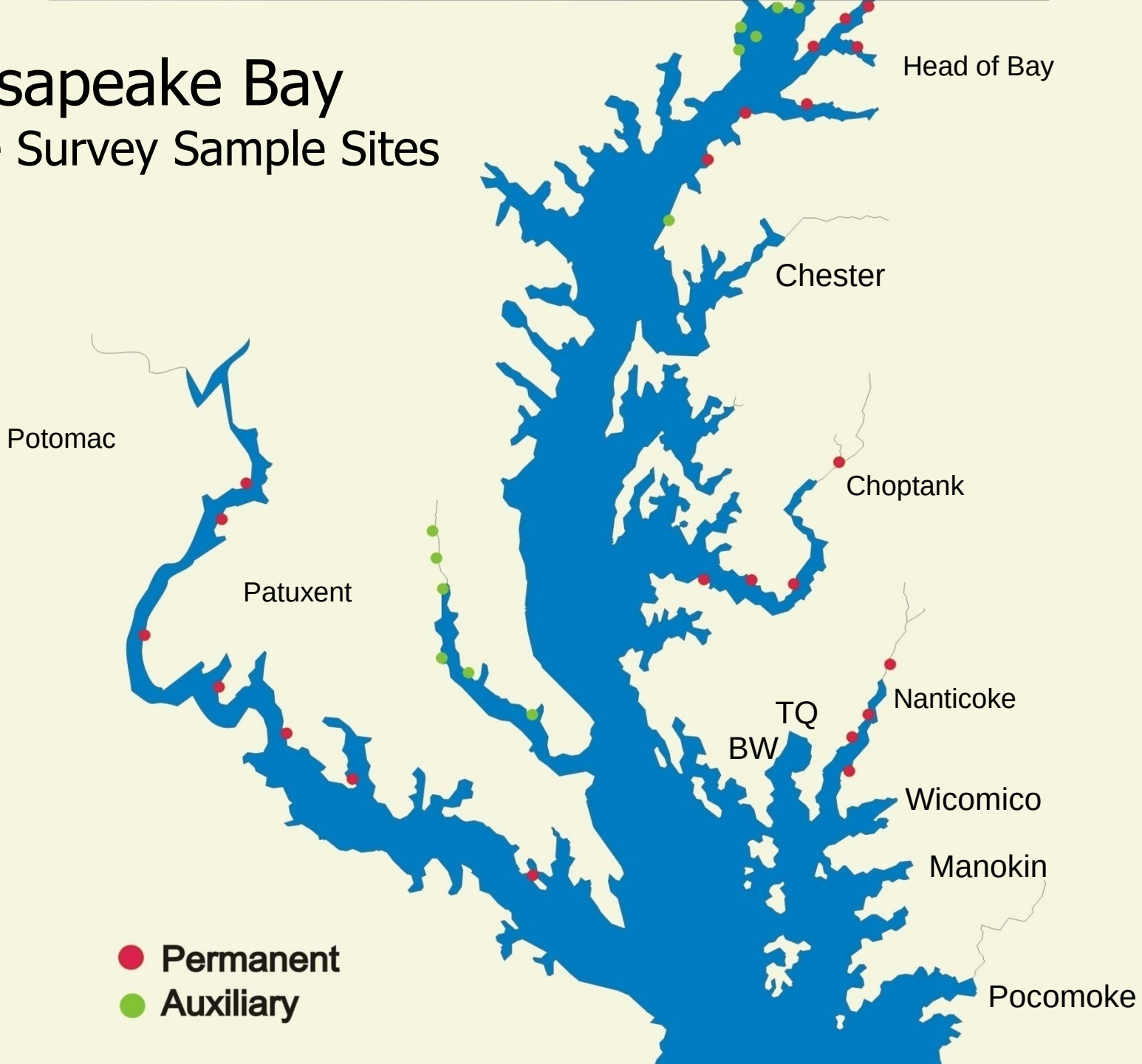
Juvenile Seine Survey

- 1954-present
- YOY index measures annual spawning success
- 100’ x 4’ x ¼” seine
- 22 sites in 4 major spawning areas
- July-Sept
- Others in VA, NJ/DE, NY

Todd Dudek, The Daily Times

Chesapeake Bay

Seine Survey Sample Sites



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Avg TL YOY 2024

- July 63 mm (2.5 inches)
- Aug 77 mm (3.0 inches)
- Sept 94 mm (3.7 inches)

Todd Dudek, The Daily Times

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Juvenile Index

- Average number of YOY caught per seine haul
- 22 sites * 2 hauls * 3 months = 132 seine hauls
- AM=# YOY / # seine hauls (Avg=11.0; 2024=2.0)

- GM preferred index in stock assessment
- GM=$\sqrt[n]{x_1 \cdot x_2 \cdot x_3 \ldots x_n}$ (Avg=4.2; 2024=1.1)
- Mutes the effect of a few very large samples

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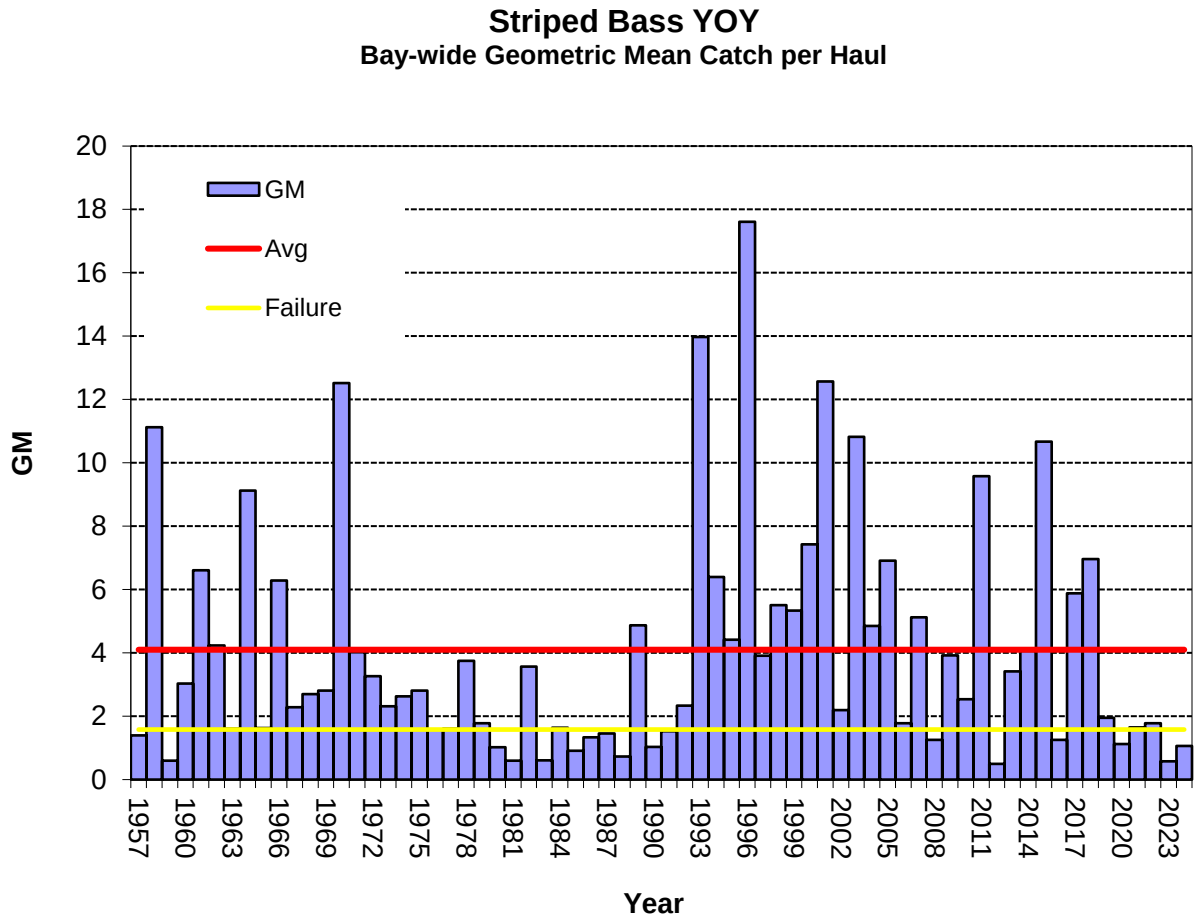
Juvenile Seine Survey Results



Management Trigger Amend 7

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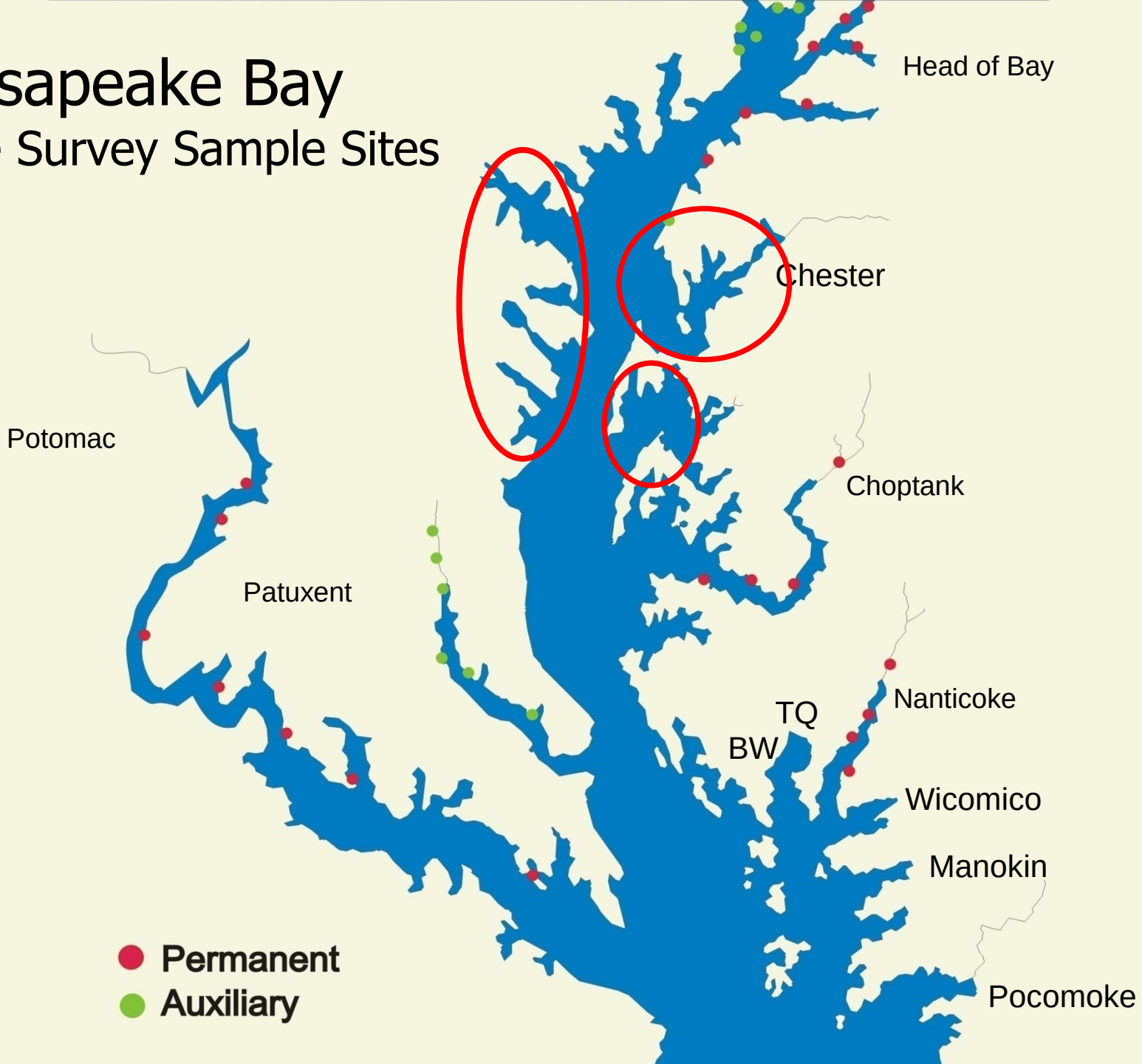
Juvenile Index

- Recent Criticisms
  - "We can show you how to catch more fish"
  - "Only sample at high tide"
  - "But I see lots of small fish"
  - "All the fish are in the Patapsco River"
  - "The fish adapted to spawn in other rivers"
  - "There are no sample sites in the mid-Bay"

Chesapeake Bay

Seine Survey Sample Sites



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Fishery Dependent Surveys

Commercial Monitoring - Methods

- 1993 – present; Chesapeake & Atlantic fisheries; year-round
- Striped bass must pass through DNR approved check stations
- Monthly targets
- Sample high and medium use check stations
- Data collected at check stations:
  - Length
  - Weight
  - Scales for ageing

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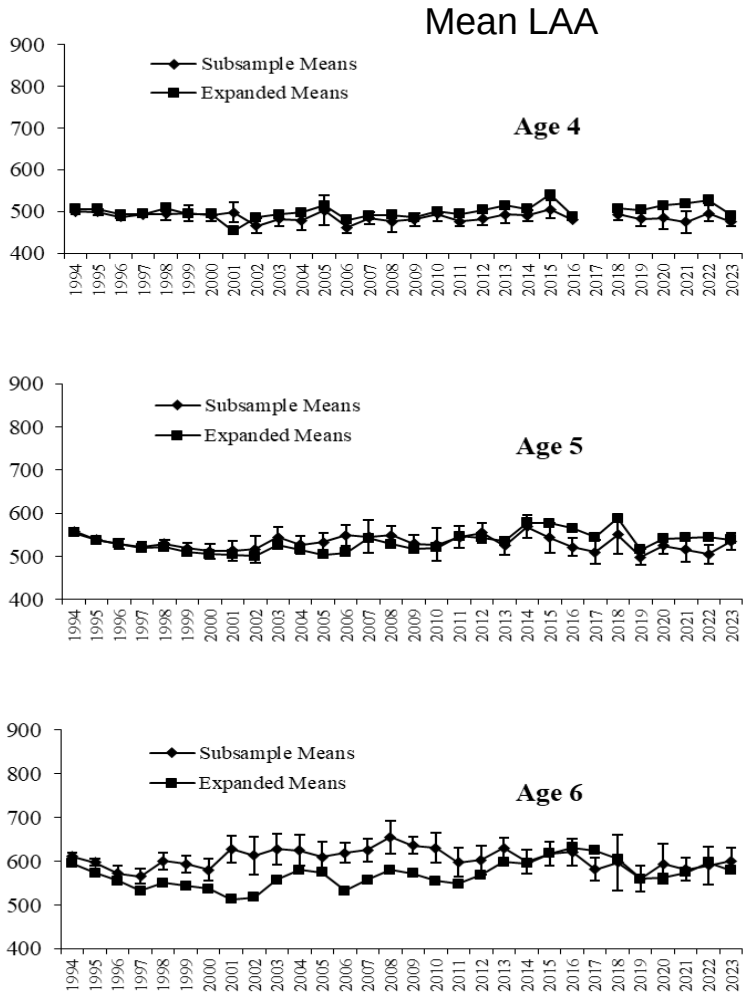
Fishery Dependent Surveys

Commercial Monitoring - Results

- Size/age distribution of harvest
- Monitor trends in length and weight-at-age of resident stock
- Create catch-at-age (CAA) matrix
- Age at recruitment into fisheries
- Calculate #s of fish harvested using our mean weight and compare to reported #s of fish



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Fishery Dependent Surveys

Pound Net Sampling - Methods

- 1993 – present; June - November
- Work with cooperating commercial fishermen
- Sample high numbers of all sizes of resident fish
- Sample entire net or representative subsample
- Total length, scales for ageing, external anomalies

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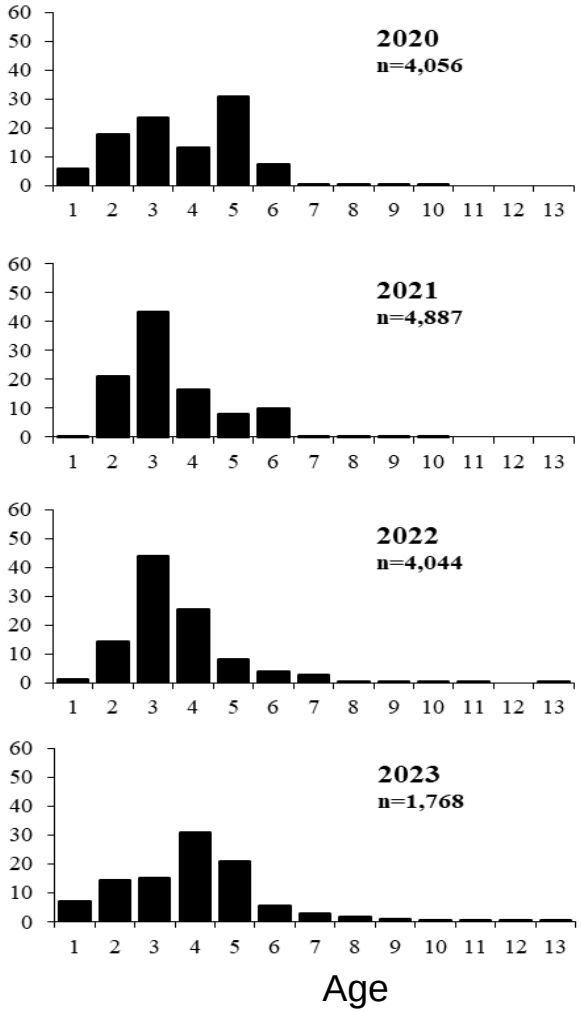
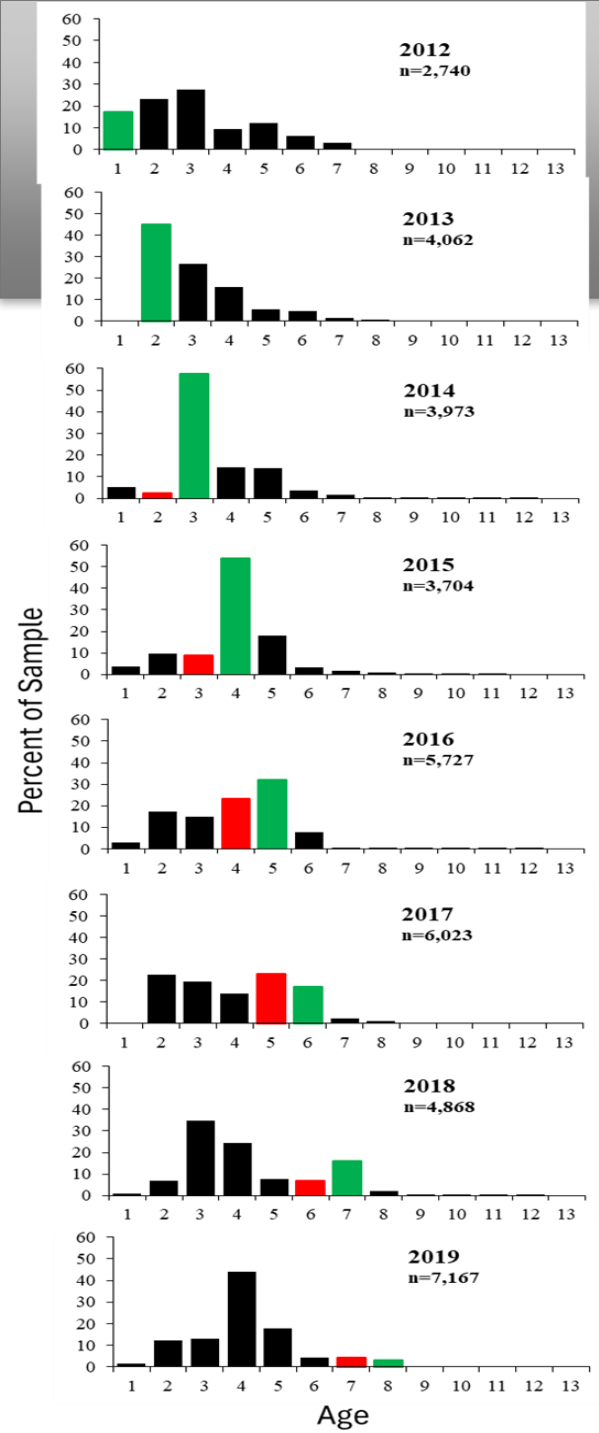
Fishery Dependent Surveys

Pound Net Sampling - Results

- Data combined with summer/fall commercial data to create combined age-length key (ALK)
- Characterize full age and length structure of Bay resident fish
- Part of MD CAA matrix to ASMFC
- Combined ALK used in Waves 4-6 recreational harvest and discard estimates in the Bay

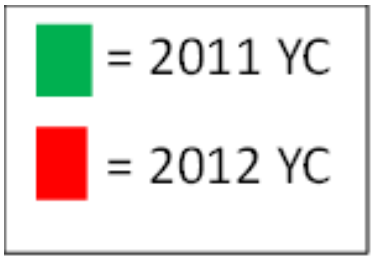


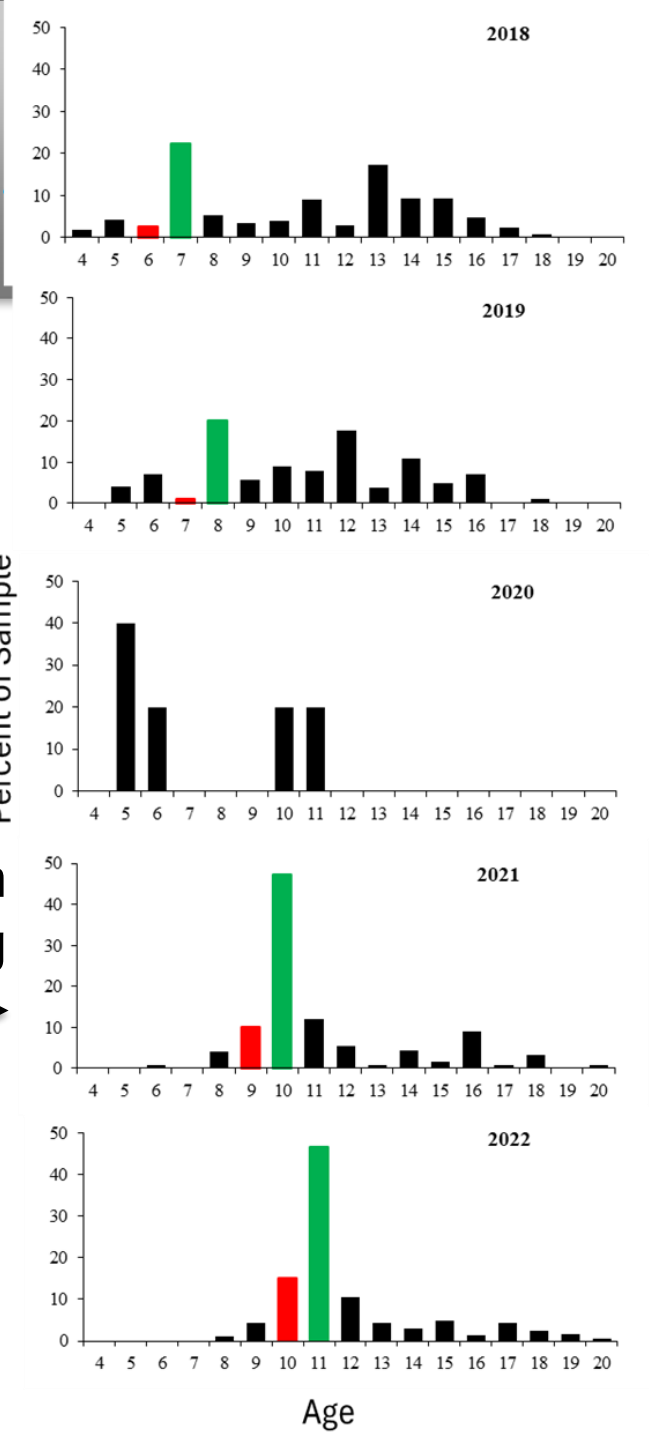
Verifying Results - Tracking Year-classes



Bay resident fish from pound net sampling

Atlantic fish from commercial sampling





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Questions?

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Fishery Dependent Surveys

Spring Creel Survey

- Sample fish at charter boat docks
  - Length and weight
  - Sex
  - Spawning condition
  - Scales/otoliths for ageing
- Access to harvested fish for biological sample collection
- Initiated to sample the trophy fishery and used in calculations of migratory fish harvest